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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/700,467	11/05/2003	Masayuki Tajiri	4074-10	8801
23117	7590	04/25/2006	EXAMINER	
NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203			LAM, DAVID	
			ART UNIT	PAPER NUMBER
			2827	

DATE MAILED: 04/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/700,467

Applicant(s)

TAJIRI, MASAYUKI

Examiner

David Lam

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 January 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-6 and 9-33 is/are pending in the application.
- 4a) Of the above claim(s) 14-26 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2-6, 11-13 and 27-29 is/are allowed.
- 6) ☒ Claim(s) 9-10, 30-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/05, 1/06
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Respond to Amendment

1. This office action is in response to the preliminary file on 2/1/06.
 - Claims 1, 7-8 have been cancelled.
 - Claims 27-33 are newly added.
 - Claims 14-26 withdrawn from consideration.
 - Claims 2-6, 9-13, 27-33 are pending in the application.

Claim Objections

2. Claims 31-32 objected to because of the following informalities: claims 31-32 are depend on non-exist claims 36, 36. Appropriate correction is required.

Specification

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an

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international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claim 30 rejected under 35 U.S.C. 102(e) as being anticipated by Whitney et al. (US 2003/0025587).

Regarding to claims 30, Whitney et al. disclose a variable resistor comprising: a first electrode (156) and a second electrode (158) facing each other and formed on a substrate (160); a variable resistance body (154) formed between the first and the second electrode, characterized in that the first electrode and the second electrode face other in a direction of a surface of the substrate; wherein the first electrode is columnar. *See at least Figs. 6A-6C, for example, in pages 6-7; paragraphs [0092-0095].*

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 9-10, 32-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Whitney et al. (US 2003/0025587) in view of Liu et al. (6,762,481).

Whitney et al. disclose a variable resistor comprising: a first electrode (156) and a second electrode (158) facing each other and formed on a substrate (160); a variable resistance body (154) formed between the first and the second electrode, characterized in that the first electrode and the second electrode face other in a direction of a surface of the substrate; wherein

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the first electrode is columnar. *See at Figs. 6A-6C, for example, in pages 6-7; paragraphs [0092-0095], and the related disclosure.*

Whitney et al. lack an inclusion of wherein the variable resistance body is made of a manganese oxide of a perovskite structure, and wherein the manganese oxide is any of $\text{Pr}_{(1-x)}\text{Ca}_x\text{MnO}_3$, $\text{La}_{(1-x)}\text{Ca}_x\text{MnO}_3$, $\text{La}_{(1-x-y)}\text{Ca}_x\text{Pb}_y\text{MnO}_3$.

Liu et al. disclose the used of perovskite structure, with resistive materials of manganese oxide that is any of $\text{Pr}_{(1-x)}\text{Ca}_x\text{MnO}_3$, $\text{La}_{(1-x)}\text{Ca}_x\text{MnO}_3$, $\text{La}_{(1-x-y)}\text{Ca}_x\text{Pb}_y\text{MnO}_3$. *For example, in claims 3, 5; Cols. 5-6, lines 37-67, 1-8, respectively, and the related disclosure.*

It would have been obvious to one having ordinary skill in the art at the time of the invention form variable resistance body of Whitney with perovskite structure, with resistive materials of manganese oxide that is any of $\text{Pr}_{(1-x)}\text{Ca}_x\text{MnO}_3$, $\text{La}_{(1-x)}\text{Ca}_x\text{MnO}_3$, $\text{La}_{(1-x-y)}\text{Ca}_x\text{Pb}_y\text{MnO}_3$. as taught by Liu et al. in order to provide constant power consumption, and low cost resistance device.

Allowable Subject Matter

6. The following is an examiner's statement of reasons for allowance: Claims 2-6, 11-13 and 27-29 are allowable over the prior art of record because none of the prior art whether taken singularly or in combination, especially when these limitations are considered within the specific combination claimed, to teach: a nonvolatile variable resistor comprising: nonvolatile variable resistance body, among others as claimed in independent claims 2, 27 formed on an outer surface of a first electrode, and a second electrodes is formed on an outer surface of the nonvolatile variable resistance body.

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Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Hsu et al. (6,693,821) disclose low cross-talk electrical programmable resistance cross point memory having bit act as a variable resistor.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Lam whose telephone number is 571-272-1782. The examiner can normally be reached on 6:00 – 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zarabian Amir can be reached on 571-272-1852852. The fax phone numbers for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

D. Lam

April 7, 2006


DAVID LAM
PRIMARY EXAMINER